

CONDITIONAL PETITION FOR EXTENSION OF TIME

If entry and consideration of the amendments above requires an extension of time, Applicants respectfully request that this be considered a petition therefor. The Assistant Commissioner is authorized to charge any fee(s) due in this connection to Deposit Account No. 14-1263.

ADDITIONAL FEE

Please charge any insufficiency of fees, or credit any excess, to Deposit Account No. 14-1263.

REMARKS/ARGUMENTS

Applicants respectfully request reconsideration and allowance of this application in view of the amendments above and the following comments.

At the outset, Applicants wish to address the showing required under 37 CFR § 1.116(a) regarding why the amendments above are necessary and were not presented earlier. The amendments above are responsive to the Responses to Arguments made on pages 2-3 and 6-7 of the Office Action final rejection, and, therefore, are necessary. These amendments were not presented earlier because Applicants believed the amendments and arguments presented in the amendment dated December 29, 2004, would be accepted. In view of the foregoing, Applicants respectfully request that the Examiner enter and consider the amendments above.

Applicants have replaced previous main claim 8 with new main claim 9. The dependencies of claims 3-5 have been changed from claim 8 to claim 9. Applicants respectfully submit that none of these amendments introduce any new matter.

Claims 3-5 and 8 were rejected under 35 USC § 112, second paragraph, as being indefinite. Specifically, the Examiner maintains his objection to the term "substantially" in claim 8 as being a relative term, and, thus, indefinite. In response, Applicants point out that new claim 9 does not use the words "substantially impermeable." Rather, new claim 9 adopts the wording of previous claim 8 which the Examiner found acceptable. Thus, the Examiner did not object to

the wording that the diaphragm prevents the two or more organic phases in respective oil droplet forms from mixing with one another. In claim 9, this feature is provided at the very end of the claim, wherein Applicants have provided "said diaphragm prevents said oil droplets comprising at least one inclusion complex from mixing with said oil droplets comprising said at least one compound separated from said at least one inclusion complex." In view of the foregoing, Applicants submit that new claim 9 is definite. An early notice to that effect is earnestly solicited.

Claims 3-5 and 8 were rejected under 35 USC § 103(a) as being obvious over Uemasu et al. ("Uemasu"), U.S. Patent No. 5,177,302, in view of Armstrong et al. ("Armstrong"), *Anal. Chem.*, 59: 2237-2241 (1987). In response, Applicants respectfully request that the Examiner reconsider and withdraw this rejection.

The Examiner's understanding of "at least two liquid-liquid interfaces" in the present claims appears to be wrong. According to the Examiner in the first sentence on page 4 of the final rejection, these are between "*an* organic phase of raw material containing at least one compound to be separated and *an* aqueous phase of inclusion-complexing agent." However, the instant claims require at least *two* organic phases and at least one aqueous phase. The "at least two liquid-liquid interfaces" are at least one *first* liquid-liquid interface between a *first* organic phase of raw material containing at least one compound to be separated and an aqueous phase of an aqueous solution of inclusion-complexing agent (e.g., cyclodextrin), and at least one *second* liquid-liquid interface between said aqueous phase and at least one *second* organic phase of extraction solvent (see page 3, lines 7-28 in the instant specification). Applicants believe the

Examiner's misunderstanding on this point, may be the reason the rejection was repeated and made final. In any event, in order to make this perfectly clear, new main claim 9 recites exactly the foregoing arrangement and phase connections in steps (a)(i)-(a)(iii). When the inventive arrangement is understood, Applicants submit that it should be clear that the Examiner's proposed combination does not, in fact, make out a *prima facie* case of obviousness as the combination of Uemasu with Armstrong utterly fails to achieve the method presently claimed.

The Examiner concedes that the primary reference, Uemasu, does not teach the use of a diaphragm or membrane in the separation process. For this feature, the Examiner, thus, relies on Armstrong. However, Applicants submit that Armstrong's systems are fundamentally different from that involved here, and, moreover, positioned differently, so that the combination of Uemasu and Armstrong does not achieve the presently claimed method.

Claim 9, in step b), requires "stirring at least a part of the first organic phase and at least a part of the aqueous phase to form oil droplets comprising the at least one inclusion complex." However, oil droplets are *not* formed in the systems of Armstrong, and, thus, the combination of Uemasu and Armstrong fails to teach this claimed feature. By way of explanation, when a paper support is used according to Armstrong, no oil droplets are formed even with stirring because the paper support is in such a state of impregnation (i.e. integration) with cyclodextrin solution that the liquid-liquid *interfaces* cannot be stirred sufficiently to form oil droplets. On the other hand, if oil droplets are formed in the liquid membrane, *without paper support*, of the system of Armstrong, any desired separation cannot be effected because there ceases to be any partition (diaphragm) between the raw material side and the extraction solvent side with destruction of the

liquid membrane. Thus, no matter how Uemasu may be combined with Armstrong, the method presently claimed cannot be realized.

Further on this point, according to Armstrong, when the filter paper is used, the zone where the filter paper is placed is perfectly coincident with the zone where the aqueous phase is placed, because the filter paper is impregnated with the aqueous phase. That is, the positions of the two liquid-liquid interfaces of the aqueous phase with the two organic phases are coincident with the positions of the two surfaces of the filter paper. Obviously, this prevents mixing of the two phases sufficient to form droplets. Moreover, Applicants have specified in claim 9 that the diaphragm is *distant* from the liquid-liquid interface. This language excludes Armstrong's arrangement, wherein the diaphragm is positioned at the same place as the aqueous phase. The combination of Uemasu and Armstrong, even if it were proper, would lead to a reaction system where the diaphragm is positioned at the same place as the aqueous phase, whereby the two liquid-liquid interfaces of the aqueous phase with the two organic phases are so coincident with the two surfaces of the filter paper that stirring resulting in the formation of oil droplets would not be possible.

As should be apparent from the wording of claim 9, the diaphragm must prevent two or more organic phases in respective oil droplet forms from mixing with each other via an aqueous phase of an aqueous solution of inclusion complexing agent even when vigorous stirring is effected. On the other hand, the liquid membrane of Armstrong is an aqueous solution of cyclodextrin in itself even when it is supported on a paper support, and is used to allow some structural isomers to permeate therethrough as asserted by the Examiner. The Examiner has

asserted that “the *permeability* of the cyclodextrin-complexed molecules are greatly enhanced through the said membrane.” However, this is wrong because the word “*selectivity*” (or “transport,”) not permeability, is mentioned in Armstrong (page 2239, first col., lines 1 and 6). In any case, Armstrong never discloses the permeability of oil droplets through the diaphragm.

Beyond this, Applicants submit that the Examiner has improperly recognized the difference of Uemasu from Applicants' invention, stating that “Uemasu et al differ from the applicant's invention in that Uemasu et al. do not disclose the use of diaphragm or membrane in the separation of aqueous layer from the organic layer in the process” (page 7, lines 2-4 in the Office Action). First, if “the separation of aqueous layer from the organic layer in the process” corresponds to the sentence at col. 3, lines 19 – 20, in Uemasu, reading “the aqueous layer is separated from the oil layer,” it should be noted that the diaphragm in the present claims is used not for the separation of aqueous layer from the organic layer in the method, *but for preventing the organic layer (oil droplets formed in aqueous phase by stirring) of raw material from migrating to the organic phase of extraction solvent and vice versa*. Second, attention should be paid to another important difference that Uemasu does not disclose continuous inclusion and extraction which are done independently. Herein, the term “continuous” indicates that inclusion and extraction are not independently effected, but continuously effected in a sense of molecular migration by simultaneous operations of inclusion and extraction without any sequential division of these operations.

In view of the foregoing, Applicants submit that the combination of Uemasu and Armstrong does not make out a *prima facie* case of the obviousness of the present claims.

Therefore, Applicants respectfully request that the Examiner reconsider and withdraw this rejection. An early notice that this rejection has been reconsidered and withdrawn is earnestly solicited.

Applicants believe that the foregoing constitutes a bona fide response to all outstanding objections and rejections.

Applicants also believe that this application is in condition for immediate allowance. However, should any issue(s) of a minor nature remain, the Examiner is respectfully requested to telephone the undersigned at telephone number (212) 808-0700 so that the issue(s) might be promptly resolved.

Early and favorable action is earnestly solicited.

Respectfully submitted,
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